Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for simulation modeling where the simulation model includes individual blocks in a block diagram structure wherein each of the individual blocks include equation sets of a physical model, comprising ~~the steps of~~:

configuring said blocks in a block diagram structure;

utilizing commercial simulation software to solve said equation sets of said blocks;

ordering said blocks in said block diagram structure to allow for waveform relaxation of sets of variables of said blocks; ~~and~~

performing waveform relaxation of said sets of variables of said blocks to generate relaxation variables; and

designing a controller with said blocks, and the relaxation variables, wherein the controller controls a system for manufacturing.

2. (Currently Amended) The method of claim 1, wherein ~~said step of~~ ordering said blocks in said block diagram structure includes decomposing said block diagram into subsystems.

3. (Currently Amended) The method of claim 1, wherein ~~said step of~~ ordering said blocks in said block diagram structure includes identifying said sets of variables of said blocks.

4. (Currently Amended) The method of claim 1, wherein ~~said step of~~ ordering said blocks in said block diagram structure includes adding a low fidelity model of one of said blocks.

5. (Currently Amended) The method of claim 4, wherein ~~said substep of~~ adding said low fidelity model of one of said blocks includes deriving an error signal from an output of said one of said blocks and an output of said low fidelity model.

6. (Currently Amended) The method of claim 5, wherein ~~said step of~~ ordering said blocks in said block diagram structure includes accelerating convergence of said simulation model by processing said error signal.

7. (Currently Amended) The method of claim 1, wherein ~~said step of~~ performing waveform relaxation includes deriving a sparse interconnect matrix.

8. (Currently Amended) The method of claim 7, wherein ~~said step of~~ performing waveform relaxation includes weakly-coupling said equation sets.

9. (Currently Amended) The method of claim 8, wherein ~~said step of~~ utilizing said commercial simulation software includes running said commercial simulation software on a plurality of data processors.

10. (Currently Amended) The method of claim 9, wherein ~~said step of~~ running said commercial software on said plurality of data processors includes waiting until each of said commercial simulation software has completed calculations before transmitting interprocessor communications data.

11. (Original) The method of claim 1, wherein said equation sets change in subsequent iterations of said simulation model.

12. (Original) The method of claim 11, wherein said equation sets increase in fidelity in subsequent iterations of said simulation model.

13. (Currently Amended) The method of claim 1, wherein ~~said step of~~ performing waveform relaxation utilizes Gauss-Jacobi methods.

14. (Currently Amended) The method of claim 1, wherein ~~said step of~~ performing waveform relaxation utilizes Gauss-Seidel methods.

15. (Currently Amended) A computer readable medium having stored thereon instructions which when executed in a computer system, cause the computer system to perform ~~the steps of~~:

configuring said blocks in a block diagram structure;

utilizing commercial simulation software to solve said equation sets of said blocks;

ordering said blocks in said block diagram structure to allow for

waveform relaxation of sets of variables of said blocks; ~~and~~

performing waveform relaxation of said sets of variables of said blocks to generate relaxation variables; and

designing a controller with said blocks, and the relaxation variables, wherein the controller controls a system for manufacturing.

16. (New) The computer readable medium of claim 15, further having stored thereon computer-readable instructions, which when executed in the computer system for ordering said blocks in said block diagram structure, cause the computer system to perform decomposing said block diagram into subsystems.

17. (New) The computer readable medium of claim 15, further having stored thereon computer-readable instructions, which when executed in the computer system for ordering said blocks in said block diagram structure, cause the computer system to perform identifying said sets of variables of said blocks.

18. (New) The computer readable medium of claim 15, further having stored thereon computer-readable instructions, which when executed in the computer system for ordering said blocks in said block diagram structure, cause the computer system to perform adding a low fidelity model of one of said blocks.

19. (New) The computer readable medium of claim 18, further having stored thereon computer-readable instructions, which when executed in the computer system for adding said low fidelity model of one of said blocks, cause the computer system to perform deriving an error signal from an output of said one of said blocks and an output of said low fidelity model.

20. (New) The computer readable medium of claim 19, further having stored thereon computer-readable instructions, which when executed in the computer system for ordering said blocks in said block diagram structure, cause the computer system to perform accelerating convergence of said simulation model by processing said error signal.

21. (New) The computer readable medium of claim 15, further having stored thereon computer-readable instructions, which when executed in the computer system for performing waveform relaxation, cause the computer system to perform deriving a sparse interconnect matrix.

22. (New) The computer readable medium of claim 21, further having stored thereon computer-readable instructions, which when executed in the computer system for performing waveform relaxation, cause the computer system to perform weakly-coupling said equation sets.

23. (New) The computer readable medium of claim 22, further having stored thereon computer-readable instructions, which when executed in the computer system for utilizing said commercial simulation software, cause the computer system to perform running said commercial simulation software on a plurality of data processors.

24. (New) The computer readable medium of claim 23, further having stored thereon computer-readable instructions, which when executed in the computer system for running said commercial software on said plurality of data processors, cause the computer system to perform waiting until each of said commercial simulation software has completed calculations before transmitting interprocessor communications data.

25. (New) The computer readable medium of claim 15, wherein said equation sets change in subsequent iterations of said simulation model.

26. (New) The computer readable medium of claim 25, wherein said equation sets increase in fidelity in subsequent iterations of said simulation model.

27. (New) The computer readable medium of claim 15, wherein performing waveform relaxation utilizes Gauss-Jacobi computer readable mediums.

28. (New) The computer readable medium of claim 15, wherein performing waveform relaxation utilizes Gauss-Seidel computer readable mediums.

29. (New) A system for simulation modeling where the simulation model includes individual blocks in a block diagram structure wherein each of the individual blocks include equation sets of a physical model, comprising:

means for configuring said blocks in a block diagram structure;

means for utilizing commercial simulation software to solve said equation sets of said blocks;

means for ordering said blocks in said block diagram structure to allow for waveform relaxation of sets of variables of said blocks;

means for performing waveform relaxation of said sets of variables of said blocks to generate relaxation variables; and

means for designing a controller with said blocks, and the relaxation variables, wherein the controller controls a system for manufacturing.

30. (New) The system of claim 29, wherein the means for ordering said blocks in said block diagram structure include means for decomposing said block diagram into subsystems.

31. (New) The system of claim 29, wherein said means for ordering said blocks in said block diagram structure includes means for identifying said sets of variables of said blocks.

32. (New) The system of claim 29, wherein said means for ordering said blocks in said block diagram structure includes means for adding a low fidelity model of one of said blocks.

33. (New) The system of claim 32, wherein said means for adding said low fidelity model of one of said blocks includes means for deriving an error signal from an output of said one of said blocks and an output of said low fidelity model.

34. (New) The system of claim 33, wherein said means for ordering said blocks in said block diagram structure includes means for accelerating convergence of said simulation model by processing said error signal.

35. (New) The system of claim 29, wherein said means for performing waveform relaxation includes means for deriving a sparse interconnect matrix.

36. (New) The system of claim 35, wherein said means for performing waveform relaxation includes means for weakly-coupling said equation sets.

37. (New) The system of claim 36, wherein said means for utilizing said commercial simulation software includes means for running said commercial simulation software on a plurality of data processors.

38. (New) The system of claim 37, wherein said means for running said commercial software on said plurality of data processors includes means for waiting until each of said commercial simulation software has completed calculations before transmitting interprocessor communications data.

39. (New) The system of claim 29, wherein said equation sets change in subsequent iterations of said simulation model.

40. (New) The system of claim 39, wherein said equation sets increase in fidelity in subsequent iterations of said simulation model.

41. (New) The system of claim 29, wherein said means for performing waveform relaxation utilizes Gauss-Jacobi systems.

42. (New) The system of claim 29, wherein said means for performing waveform relaxation utilizes Gauss-Seidel systems.